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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/678,183	10/02/2000	Daniel A. Schoch	M-193	4840

22855 7590 05/22/2002

RANDALL J. KNUTH P.C.
3510-A STELLHORN ROAD
FORT WAYNE, IN 46815-4631

EXAMINER

WEST, JEFFREY R

ART UNIT	PAPER NUMBER
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2857

DATE MAILED: 05/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/678,183

Applicant(s)

SCHOCH ET AL.

Examiner

Jeffrey R. West

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 October 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings in Figures 3, 4, and 5b are objected to because the axes of the graphs are not adequately labeled and therefore it is unclear what information is being displayed.
2. The drawing in Figure 1 is objected to because it does not have sufficiently descriptive labels, specifically items "14" and "16". Blank boxes in drawings should be labeled descriptively unless it is a well-known component.
3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the plot of "the calculated distance above bottom dead center values vs. time" (i.e. slide displacement vs. time) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. It is noted that Figures 3a-3d are plots of "load vs. time", Figure 4 is a plot of slide displacement curves on an unknown x-axis, and Figures 5a and 5b are described as plots of slide displacement curves, however; Figure 5b has no y-axis label and the corresponding graph in Figure 5a is a plot of dynamic load and slide displacement vs. crank angle.
4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5)

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because they include the following reference sign(s) not mentioned in the description: "A", "B", "C", "BDC", "x1", "x2", "FSC", and "FST".

5. The drawing in Figure 4 is objected to because it is unclear whether the two curves are on the same axis or two separate axes. It is also unclear whether reference number "58" is labeling one or two points.

6. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

7. The abstract of the disclosure is objected to because it is less than the required length of 50 words. Correction is required. See MPEP § 608.01(b).

8. The disclosure is objected to because of the following informalities:

On page 19, lines 8-9, "U.S. Provisional Patent Application Serial No., 60/15*9,818" should be ---U.S. Provisional Patent Application Serial No., 60/159,818---.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 1-4, 6, 11, 20-24, and 26 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1, 3, 6, 20, and 26 include the limitation of providing/storing an equation which can be used for generating a theoretical slide displacement curve based on the press speed and a plurality of variables corresponding to characteristics of the press, however, this equation is never provided in the specification. Because the equation is not provided, the specification does not describe to one having ordinary skill in the art the relationship between the variables and the slide displacement or the nature in which variables can be represented by values in order to determine the slide displacement curve. Therefore, claims 1, 3, 6, 20, and 26 do not clearly describe the method of using the instant invention.

Claims 2, 4, and 21-24 are rejected under 35 U.S.C. 112, first paragraph, because they incorporate and fail to correct the lack of clarity present in parent claims 1, 3, and 20.

With respect to claims 2, 4, 22, and 26 the limitation of determining a variable corresponding to the press drive mechanism is unclear because there is no description of what type of variable, or corresponding unit, could be used in an equation to apply to the drive type of the press.

Claim 11 is rejected under 35 U.S.C. 112, first paragraph, because it recites, "establishing the contact point on the actual slide displacement curve as the first inflection point on the actual slide displacement curve". At no time in the specification, however, is there any description of the purpose, or advantage, for using the first inflection point as the contact point and, therefore, it is unclear how one with ordinary skill in the art would use this particular limitation of the invention.

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being vague and indefinite because it recites the limitation of "calculating the sum of the distances between the theoretical slide displacement curve and the actual slide displacement curve at each increment", twice. It is unclear why this limitation is listed twice since there is a further limitation of repeating the calculating step. Further, with respect to the repetition of the shifting and calculating steps, it is unclear whether all of the calculating steps are to be repeated or only the final calculating step.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. Re. 34,559 to Mickowski in view of U.S. Patent No. 5,182,935 to Schockman.

Mickowski discloses a diagnostic method for analyzing and monitoring the process parameters in the operation of reciprocating equipment comprising a microprocessor in communication with a non-volatile memory, input device, display, and transducers (column 3, lines 61-68 and Figure 1) wherein the transducers sense and supply velocity data, that can be representative of time increments (column 6, lines 30-31), to the microprocessor (column 4, lines 1-5) as a function of stroke position (i.e. ram/slide displacement above dead bottom center) during a production cycle (column 4, lines 23-33).

Mickowski also discloses inputting the velocity data to the microprocessor (column 7, lines 29-37 and 53-56), storing the data to determine the current displacement profile (column 2, lines 51-55) and plotting, on the display, the velocity as a function of displacement and a superimposed theoretical profile in order to compare the actual and theoretical curves at any individual point of displacement

(column 4, lines 46-50 and 57-66). Mickowski also discloses obtaining, and plotting, the pressure/load data vs. displacement (column 5, lines 55-60) as well as the displacement vs. each increment of time (i.e. count quantity) in a stroke (column 6, lines 26-31 and column 7, lines 11-18).

Mickowski does not teach, however, providing an equation for calculating the slide displacement as a function of press speed and a plurality of variables at the computational device.

Schockman teaches a single reciprocating dynamic balancer for a double action stamping press comprising determining, and plotting, theoretical force (i.e. load) vs. crank angle and slide displacement vs. crank angle (i.e. count quantity) curves based on the speed of the press, the stroke length, connection rod length, and drive connection information (column 4, lines 5-20 and Figures 1, 2, and 6). Although Schockman doesn't specifically disclose providing these variables, with an equation, to a computational device to determine the curves, it is considered inherent that some type of equation or formula must be used to translate the variable information into the load and displacement curves.

It would have been obvious to one having ordinary skill in the art to modify the invention of Mickowski to include providing an equation for calculating the slide displacement as a function of press speed and a plurality of variables to the computational device, as taught by Schockman, because Schockman suggests a method for determining slide displacement curves that takes into account the specifications of a double action press that effect its displacement (column 4, lines 5-

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8). Further, since Mickowski teaches plotting the load vs. displacement and teaches the relationship between displacement, velocity, and time measurements (column 6, lines 26-31) it would have been obvious to one having ordinary skill in the art to provide a more thorough diagnostic output by displaying a plot of load vs. time in addition to the aforementioned plots.

15. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mickowski in view of Schockman, and further in view of U.S. Patent No. 5,099,731 to Eigenmann.

As noted above, Mickowski and Schockman teach all the features of the claimed invention, except for determining an appropriate variable corresponding to the bearing size of the mechanical press.

Eigenmann teaches a multi-stroke punch press with a means for correcting the immersion depth and the length of feed comprising determining a theoretical design characteristic curve of the depth of the immersion of the tool vs. the velocity of the strokes and comparing the theoretical curve against the actual curve (column 4, lines 24-40) wherein the no-load (column 3, lines 19-21) characteristic curve is determined using the heights of the bearings as well as a dynamic deflection value (column 3, lines 32-48).

It would have been obvious to one having ordinary skill in the art to modify the invention of Mickowski and Schockman to include determining an appropriate variable corresponding to the bearing size of the mechanical press, as taught by

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Eigenmann, because Eigenmann suggests that to obtain an accurate measure of tool displacement, all of the contributing factors, including bearing height and dynamic deflection, must be considered (column 3, lines 32-48).

16. Claims 5, 7-10, 20, 21, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mickowski in view of Schockman, and further in view of U.S. Patent No. 5,113,756 to Fujii and U.S. Patent No. 5,555,757 to Smith et al.

As noted above, Mickowski and Schockman teach all the features of the claimed invention, except for determining the contact point on the actual slide displacement curve which corresponds to the slide contacting the stock material, establishing a start point on the slide downstroke between top dead center and the contact point, and establishing an end point on the slide upstroke between top dead center and the contact point.

Fujii teaches a method for determining and adjusting the die height of a press machine (column 5, lines 54-56) comprising a non-contact sensor that detects the position of a detection body attached to the slider (column 6, lines 9-18) and produces a signal indicating the contact between the slider and the bottom dead point position of the press (column 6, 18-21) as well as the contact between the slider and the top dead point position of the press (column 6, lines 27-31) in order to automatically adjust the die height during the operation of the machine (column 6, lines 32-47).

Smith teaches a flat die thread roller with a slide drive system that reciprocates in response to the cam rotation (column 5, lines 20-27) and a diagram illustrating the displacement curve of a slide in comparison with a reference displacement curve (column 4, lines 43-47, Figure 13, and column 10 line 66 to column 11, line 10) wherein the diagram labels a starting point on the downstroke of both displacement curves (column 11, lines 14-16), a point of full slide extension to the workpiece (column 11, lines 30-35), and an ending point on the upstroke of both displacement curves (column 11, lines 51-58). Although Smith doesn't specifically disclose labeling the starting point as a point between the top dead center and the contact point or the ending point as a point between the contact point and top dead center, since the applicant describes using the starting and ending points only as a comparison tool, the limitation that the starting point be at a position past the actual start of machining, is considered to be an engineering design choice.

It would have been obvious to one having ordinary skill in the art to modify the invention of Mickowski and Schockman to include determining the contact point on the actual slide displacement curve which corresponds to the slide contacting the stock material, establishing a start point on the slide downstroke between top dead center and the contact point, and establishing an end point on the slide upstroke between top dead center and the contact point, as taught by Fujii in combination with Smith, because, as suggested by Fujii, the combination would have continually adjusted the measurements of displacement taken during operation to account for thermal expansion (column 6, lines 38-50), and, further, the labeled diagram

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presented by Smith would have provided a clearer representation of the slide displacement for implementing the comparison described in the invention of Mickowski and Schockman.

17. Claims 6 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mickowski in view of Schockman, Fujii, and Smith, and further in view of U.S. Patent No. 5,099,731 to Eigenmann.

As noted above, Mickowski in combination with Schockman, Fujii, and Smith teach all the features of the claimed invention, except for determining an appropriate variable corresponding to the bearing size of the mechanical press.

Eigenmann teaches a multi-stroke punch press with a means for correcting the immersion depth and the length of feed comprising determining a theoretical design characteristic curve of the depth of the immersion of the tool vs. the velocity of the strokes and comparing the theoretical curve against the actual curve (column 4, lines 24-40) wherein the no-load (column 3, lines 19-21) characteristic curve is determined using the heights of the bearings as well as a dynamic deflection value (column 3, lines 32-48).

It would have been obvious to one having ordinary skill in the art to modify the invention of Mickowski, Schockman, Fujii, and Smith to include determining an appropriate variable corresponding to the bearing size of the mechanical press, as taught by Eigenmann, because Eigenmann suggests that to obtain an accurate

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measure of tool displacement all of the contributing factors, including bearing height and dynamic deflection, must be taken into consideration (column 3, lines 32-48).

18. Claims 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mickowski in view of Schockman, Eigenmann, Fujii, and Smith; and further in view of U.S. Patent No. 5,870,254 to Baserman et al.

As noted above, Mickowski in combination with Schockman, Eigenmann, Fujii, and Smith teach all of the features of the claimed invention except for including a value of static stiffness with the other obtained press information for calculating the load on the press at any point of the slide stroke by multiplying the value of dynamic deflection for the relevant point of the slide stroke by the value of static stiffness.

Baserman teaches a transducer suspension system comprising a rotary actuator that moves an assembly to position the transducer elements on a plurality of sliders (column 3, lines 52-55) wherein the load on the slider is calculated by multiplying the deflection of an imaginary axis passing through the center of the slider by its vertical stiffness (column 5, lines 26-31).

It would have been obvious to one having ordinary skill in the art to modify the invention of Mickowski, Schockman, Eigenmann, Fujii, and Smith to include a value of static stiffness with the other obtained press information for calculating the load on the press at any point of the slide stroke by multiplying the value of dynamic deflection for the relevant point of the slide stroke by the value of static stiffness, as taught by Baserman, because the combination would have provided a method for

determining the necessary values for plotting the load vs. displacement, as taught by Mickowski, and the load vs. crank angle, as taught by Schockman, using a known characteristic-dependent load formula. Also, it would have been obvious to one having ordinary skill in the art to determine a plurality of dynamic deflection values along the slide stroke and use the same method for calculating the load at any desired point along the slider because it would have allowed the construction of a complete load plot over the entire operation of the machine.

19. Claims 14, 15, 17-19, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mickowski in view of Schockman, Eigenmann, Fujii, Smith, and Baserman, and further in view of U.S. Patent No. 3,885,283 to Biondetti.

As noted above, Mickowski in combination with Schockman, Eigenmann, Fujii, Smith, and Baserman teach all of the features of the claimed invention, except for establishing the computed difference, along the ordinate, between the theoretical no load value and the actual load value of slide displacement as the value of dynamic deflection.

Biondetti teaches a press roll comprising a beam that is straight under no load and bends slightly when loaded wherein the amount of bending is the dynamic deflection value (column 2, lines 44-48).

It would have been obvious to one having ordinary skill in the art to modify the invention of Mickowski, Schockman, Eigenmann, Fujii, Smith, and Baserman to include establishing the computed difference, along the ordinate, between the

theoretical no load value and the actual load value of slide displacement as the value of dynamic deflection, as taught by Biondetti, because Biondetti suggests that the deflection of the press is caused by the application of a load. Therefore, in light of the teaching of Biondetti, it would have been obvious that the difference, along an imaginary parallel line, between a measurement of displacement under no-load and a measurement of displacement under load would have to be caused by the deflection of the press because the only difference between the measurements is the application of a load, and Biondetti teaches that the application of the load causes a deflection.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 5,720,988 to Yoneda teaches a slide bottom dead center position compensating device.

U.S. Patent No. 4,309,893 to Mueller teaches an improved plug-shaped press crown for a press assembly with a stiffness value of the plug that effects the press deflection and the press deflection is measured as the axis ordinate to the center line of the press under full load conditions.

U.S. Patent No. 4,619,396 to Yamamoto teaches a cold pressure welding apparatus and a corresponding plot of load versus displacement at a plurality of inflection points.

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U.S. Patent No. 6,381,564 to Davis et al. teaches comparing two RSM curves by determining the square root of the sum of squares at all of the differences between the theoretical and observed values and adjusting the current parameters to minimize the error between them.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (703)308-1309. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

jrw
May 16, 2002


MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800